Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-3. (cancelled)

4. (currently amended) A method of demagnetizing magnetic media for recording data in a data storage device, comprising the steps of:

(a) placing the magnetic media in a magnetic field at a first strength level; and

(b) gradually reducing the magnetic field to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the magnetic media~~The method of claim 1~~, wherein the magnitude of each decrement is based on the magnetic coercivity of the magnetic media.

5. (currently amended) A method of demagnetizing magnetic media for recording data in a data storage device, comprising the steps of:

(a) placing the magnetic media in a magnetic field at a first strength level~~The method of claim 1~~, wherein the ~~said~~ first strength level is based on the magnetic coercivity of the magnetic media; and

(b) gradually reducing the magnetic field to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the magnetic media.

6. (currently amended) A method of demagnetizing magnetic media for recording data in a data storage device, comprising the steps of:

(a) placing the magnetic media in a magnetic field at a first strength level; and

(b) gradually reducing the magnetic field to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the magnetic media~~The method of claim 1~~, wherein the ~~said~~ second strength level is substantially zero.

7. (currently amended) A method of demagnetizing magnetic media for recording data in a data storage device, comprising the steps of:

(a) placing the magnetic media in a magnetic field at a first strength level~~The method of claim 1~~, wherein the ~~said~~ magnetic field is substantially perpendicular to ~~the surface of~~ the magnetic media and the first strength level is based on the magnetic coercivity of the magnetic media; and

(b) gradually reducing the magnetic field to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the magnetic media, wherein the magnitude of each decrement is based on the magnetic coercivity of the magnetic media and the second strength level is substantially zero.

8. (currently amended) The method of claim 7, ~~1,~~ wherein:

step (a) further includes the steps of:

positioning an electromagnet proximate to the magnetic media; and

providing electrical power to the electromagnet to generate the ~~said~~ magnetic field at the ~~said~~ first strength level; and

step (b) further includes the step ~~steps~~ of gradually reducing the electrical power to the electromagnet to gradually reduce the magnetic field to the ~~said~~ second strength level.

9-12. (cancelled)

13. (currently amended) A method of demagnetizing a magnetic data disk for recording data in a disk drive, comprising the steps of:

(a) placing the disk in a magnetic field at a first strength level; and

(b) gradually reducing the magnetic field to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the disk, wherein the stepwise decrements are separated by predetermined time periods and ~~The method of claim 12, wherein~~ the duration of each time period is based on the speed of rotation of the ~~data~~ disk.

14. (currently amended) A method of demagnetizing a magnetic data disk for recording data in a disk drive, comprising the steps of:

(a) placing the disk in a magnetic field at a first strength level; and

(b) gradually reducing the magnetic field to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the disk, wherein the stepwise decrements are separated by predetermined time periods and ~~The method of claim 12, wherein~~ the duration of each time period is ~~at least~~ longer than the duration of a revolution of the ~~data~~ disk.

15. (currently amended) A method of demagnetizing a magnetic data disk for recording data in a disk drive, comprising the steps of:

(a) placing the disk in a magnetic field at a first strength level; and

(b) gradually reducing the magnetic field to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the disk~~The method of claim 9~~, wherein the magnitude of each decrement is based on the magnetic coercivity of the disk~~magnetic media~~.

16. (currently amended) A method of demagnetizing a magnetic data disk for recording data in a disk drive, comprising the steps of:

(a) placing the disk in a magnetic field at a first strength level, wherein the disk includes opposing surfaces;

(b) placing electromagnets proximate each surface of the disk such that at least a portion of each surface of the disk is between the electromagnets;

(c) providing electrical power to the electromagnets to generate the magnetic field at the first strength level;

(d) rotating the disk in relation to the electromagnets such that the magnetic field is substantially perpendicular to the surfaces of the disk; and

(e) gradually reducing the magnetic field to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the disk, wherein the stepwise decrements are separated by predetermined time periods, the duration of each time period is based on the speed of rotation of the disk and the~~The~~

~~method of claim 10, wherein said~~ magnetic field is substantially perpendicular to the surfaces of the disk~~magnetic media~~.

17. (currently amended) The method of claim 16, ~~10,~~ wherein step (e) ~~(a)~~ further includes the step ~~steps~~ of moving the electromagnets essentially radially in relation to the ~~rotating data~~ disk to expose a recording area on the ~~disk~~ surfaces of the disk to the ~~said~~ magnetic field.

18-21. (cancelled)

22. (currently amended) An apparatus for demagnetizing a magnetic data disk for recording data in a data storage device, comprising:

an electromagnet which generates a magnetic field when provided with electrical power;

a first support for positioning the disk proximate to the electromagnet such that the magnetic field overlaps at least a portion of the disk; and

a controller for selectively providing electrical power to the electromagnet to generate the magnetic field at different strength levels, wherein the controller gradually reduces the electrical power from a first power level to a second power level, to reduce the magnetic field from a first strength level to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the disk, wherein the stepwise decrements are separated by predetermined time periods and~~The apparatus of~~

~~claim 21, wherein~~ the duration of each time period is ~~at least~~ longer than the duration of a revolution of the ~~data~~ disk.

23. (currently amended) An apparatus for demagnetizing magnetic media for recording data in a data storage device, comprising:

an electromagnet which generates a magnetic field when provided with electrical power;

a first support for positioning the magnetic media proximate to the electromagnet such that the magnetic field overlaps at least a portion of the magnetic media; and

a controller for selectively providing electrical power to the electromagnet to generate the magnetic field at different strength levels, wherein the controller gradually reduces the electrical power from a first power level to a second power level, to reduce the magnetic field from a first strength level to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the magnetic media~~The apparatus of claim 18~~, wherein the magnitude of each decrement is based on the magnetic coercivity of the magnetic media.

24. (currently amended) An apparatus for demagnetizing a magnetic data disk for recording data in a data storage device, comprising:

an electromagnet which generates a magnetic field when provided with electrical power;

a first support for positioning the disk proximate to the electromagnet such that the magnetic field overlaps at least a portion of the disk; and

a controller for selectively providing electrical power to the electromagnet to generate the magnetic field at different strength levels, wherein the controller gradually reduces the electrical power from a first power level to a second power level, to reduce the magnetic field from a first strength level to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the disk, wherein the stepwise decrements are separated by predetermined time periods, the duration of each time period is longer than the duration of a revolution of the disk, the magnitude of each decrement is based on the magnetic coercivity of the disk and the~~The apparatus of claim 18, wherein said~~ magnetic field is substantially perpendicular to the disk~~surface of the magnetic media~~.

25. (currently amended) An apparatus for demagnetizing a magnetic data disk for recording data in a data storage device, comprising:

an electromagnet which generates a magnetic field when provided with electrical power;

a first support for positioning the disk proximate to the electromagnet such that the magnetic field overlaps at least a portion of the disk;

~~The apparatus of claim 19 further comprising:~~

a second support for moving the electromagnet essentially radially in relation to the ~~rotating data~~ disk to expose a recording area on the disk ~~surfaces~~ to the ~~said~~ magnetic field; and

a controller for selectively providing electrical power to the electromagnet to generate the magnetic field at different strength levels, wherein the controller gradually

reduces the electrical power from a first power level to a second power level, to reduce the magnetic field from a first strength level to a second strength level by multiple stepwise decrements, to essentially eliminate net magnetization in the recording area of the disk and the magnitude of each decrement is based on the magnetic coercivity of the disk.

26-46. (cancelled)

47. (previously presented) A method of demagnetizing magnetic media for recording data in a data storage device, comprising the steps of:

(a) placing the magnetic media in a magnetic field at a first strength level; and

(b) gradually reducing the magnetic field to a second strength level to essentially eliminate net magnetization in the magnetic media;

wherein at least one of the first and second strength levels is based on the magnetic coercivity of the magnetic media.

48. (previously presented) The method of claim 47, wherein in step (b) the magnetic field is gradually reduced from the first strength level to the second strength level based on the magnetic coercivity of the magnetic media.

49. (currently amended) A method of demagnetizing a magnetic data disk for recording data in a disk drive, comprising the steps of:

(a) placing the ~~magnetic data~~ disk in a magnetic field at a first strength level; and

(b) gradually reducing the magnetic field to a second strength level to essentially eliminate net magnetization in the disk~~magnetic media~~;

wherein at least one of the first and second strength levels is based on the magnetic coercivity of the disk~~magnetic media~~.

50. (currently amended) The method of claim 49, wherein in step (b) the magnetic field is gradually reduced from the first strength level to the second strength level based on the magnetic coercivity of the disk~~magnetic media~~.

51. (currently amended) An apparatus for demagnetizing magnetic media for recording data in a data storage device, comprising:

an electromagnet which generates a magnetic field when provided with electrical power;

a first support for positioning the magnetic media proximate to the electromagnet such that the magnetic field overlaps at least a portion of the magnetic media; and

a controller for selectively providing electrical power to the electromagnet to generate the magnetic field ~~fields~~ at different strength levels, wherein the controller ~~is configured to~~ gradually reduces the ~~reduce~~ electrical power ~~to the electromagnet~~ from a first power level to a second power level, to reduce the magnetic field from a first

strength level to a second strength level, ~~respectively,~~ to essentially eliminate net magnetization in the magnetic media;

wherein at least one of the first and second strength levels is based on the magnetic coercivity of the magnetic media.

52. (previously presented) The apparatus of claim 51, wherein the controller reduces the magnetic field from the first strength level to the second strength level based on the magnetic coercivity of the magnetic media.

53. (new) A method of demagnetizing a magnetic data disk for recording data in a disk drive, comprising the steps of:

placing the disk in a magnetic field at a first strength level; and

reducing the magnetic field from the first strength level to a second strength level while rotating the disk to essentially eliminate net magnetization in a recording area of the disk, wherein the rate of reducing the magnetic field is based on the rotational speed of the disk.

54. (new) The method of claim 53, wherein the first strength level is higher than the magnetic coercivity of the disk.

55. (new) The method of claim 53, wherein the second strength level is substantially zero.

56. (new) The method of claim 53, wherein the first strength level is higher than the magnetic coercivity of the disk and the second strength level is substantially zero.

57. (new) The method of claim 53, wherein the magnetic field is substantially perpendicular to the disk.

58. (new) The method of claim 53, wherein the magnetic field provides an AC erase for the recording area of the disk.

59. (new) The method of claim 58, wherein the AC erase is a bulk erase.

60. (new) The method of claim 58, wherein the AC erase is a track-by-track erase.

61. (new) The method of claim 53, wherein the magnetic field is reduced from the first strength level to the second strength level continuously.

62. (new) The method of claim 53, wherein the magnetic field is reduced from the first strength level to the second strength level by multiple stepwise decrements.

63. (new) The method of claim 62, wherein the stepwise decrements are separated by predetermined time periods.

64. (new) The method of claim 63, wherein the duration of each time period is the same as the duration of a revolution of the disk.

65. (new) The method of claim 63, wherein the duration of each time period is longer than the duration of a revolution of the disk.

66. (new) The method of claim 63, wherein the duration of each time period is longer than the duration of a revolution of the disk and shorter than the duration of two revolutions of the disk.

67. (new) The method of claim 63, wherein the duration of each time period is marginally longer than the duration of a revolution of the disk and shorter than the duration of two revolutions of the disk.

68. (new) The method of claim 63, wherein the duration of each time period is the same as the duration of two revolutions of the disk.

69. (new) The method of claim 63, wherein the magnitude of each decrement is based on the magnetic coercivity of the disk.

70. (new) The method of claim 53, wherein the rate of reducing the magnetic field is based on a monitored rotational speed of the disk.

71. (new) The method of claim 53, wherein the rate of reducing the magnetic field is based on a predetermined rotational speed of the disk.

72. (new) The method of claim 53, wherein the rate of reducing the magnetic field increases as the rotational speed of the disk increases.

73. (new) The method of claim 53, including reducing the magnetic field from the first strength level to a second strength level while rotating the disk to essentially eliminate net magnetization in the disk.

74. (new) The method of claim 53, including demagnetizing the disk before assembling the disk in the disk drive.

75. (new) The method of claim 53, including demagnetizing the disk after assembling the disk in the disk drive.

76. (new) The method of claim 53, including demagnetizing the disk using first and second electromagnets, wherein the disk includes first and second opposing surfaces, the first and second electromagnets each include first and second poles and a gap therebetween, the first electromagnet is positioned proximate to the first surface and not the second surface, the second electromagnet is positioned proximate to the second surface and not the first surface, the disk is spaced from the gaps, the magnetic field flows between the first poles across the disk and between the second poles across the

disk, and the poles extend across the width of the disk between the inner and outer diameters of the disk and are stationary as the disk is demagnetized.

77. (new) The method of claim 53, including demagnetizing the disk using first and second electromagnets, wherein the disk includes first and second opposing surfaces, the first and second electromagnets each include first and second poles and a gap therebetween, the first electromagnet is positioned proximate to the first surface and not the second surface, the second electromagnet is positioned proximate to the second surface and not the first surface, the disk is spaced from the gaps, the magnetic field flows between the first poles across the disk and between the second poles across the disk, and the poles extend across less than the width of the disk between the inner and outer diameters of the disk and are moved essentially radially in relation to the disk as the disk is demagnetized.

78. (new) The method of claim 53, including demagnetizing the disk using first and second electromagnets, wherein the disk includes first and second opposing surfaces, the first and second electromagnets each include first and second poles and a gap therebetween, the first electromagnet is positioned proximate to the first and second surfaces, the second electromagnet is positioned proximate to the first and second surfaces, the disk extends into the gaps, the magnetic field flows between the poles of the first electromagnet across the disk and between the poles of the second electromagnet across the disk, and the poles extend across the width of the disk between the inner and outer diameters of the disk.

79. (new) The method of claim 53, including demagnetizing the disk using a spin stand.

80. (new) The method of claim 53, including demagnetizing the disk using a transducer head of the disk drive.

81. (new) The method of claim 53, including writing servo patterns to the disk after demagnetizing the disk.

82. (new) The method of claim 53, excluding writing data to the disk before demagnetizing the disk.

83. (new) A method of demagnetizing a magnetic data disk for recording data in a disk drive, comprising the steps of:

placing the disk in a magnetic field at a first strength level; and

reducing the magnetic field from the first strength level to a second strength level while rotating the disk to essentially eliminate net magnetization in a recording area of the disk, wherein the magnetic field is substantially perpendicular to the disk and provides an AC erase for the recording area of the disk and the rate of reducing the magnetic field is based on the rotational speed of the disk.

84. (new) The method of claim 83, wherein the first strength level is higher than the magnetic coercivity of the disk and the second strength level is substantially zero.

85. (new) The method of claim 83, wherein the AC erase is a bulk erase.

86. (new) The method of claim 83, wherein the AC erase is a track-by-track erase.

87. (new) The method of claim 83, wherein the magnetic field is reduced from the first strength level to the second strength level continuously.

88. (new) The method of claim 83, wherein the magnetic field is reduced from the first strength level to the second strength level by multiple stepwise decrements and the stepwise decrements are separated by predetermined time periods.

89. (new) The method of claim 88, wherein the duration of each time period is the same as the duration of a revolution of the disk.

90. (new) The method of claim 88, wherein the duration of each time period is longer than the duration of a revolution of the disk.

91. (new) The method of claim 88, wherein the duration of each time period is longer than the duration of a revolution of the disk and shorter than the duration of two revolutions of the disk.

92. (new) The method of claim 88, wherein the duration of each time period is marginally longer than the duration of a revolution of the disk and shorter than the duration of two revolutions of the disk.

93. (new) The method of claim 88, wherein the duration of each time period is the same as the duration of two revolutions of the disk.

94. (new) The method of claim 88, wherein the magnitude of each decrement is based on the magnetic coercivity of the disk.

95. (new) The method of claim 83, wherein the rate of reducing the magnetic field is based on a monitored rotational speed of the disk.

96. (new) The method of claim 83, wherein the rate of reducing the magnetic field is based on a predetermined rotational speed of the disk.

97. (new) The method of claim 83, wherein the rate of reducing the magnetic field increases as the rotational speed of the disk increases.

98. (new) The method of claim 83, including reducing the magnetic field from the first strength level to a second strength level while rotating the disk to essentially eliminate net magnetization in the disk.

99. (new) The method of claim 83, including demagnetizing the disk before assembling the disk in the disk drive.

100. (new) The method of claim 83, including demagnetizing the disk after assembling the disk in the disk drive.

101. (new) The method of claim 83, including writing servo patterns to the disk after demagnetizing the disk.

102. (new) The method of claim 83, excluding writing data to the disk before demagnetizing the disk.